

ABSTRACT

An improved design for turbines increases efficiency while reducing potential for fish kill. In an embodiment of the present invention as relates to Kaplan turbines, the gap between stay vanes and their corresponding wicket gates is reduced or eliminated by provision of an extension to the trailing edge of the stay vane. In alternative embodiments, the extension may be added to the wicket gate or affixed to both in an arrangement that permits free movement of the wicket gate. To facilitate eliminating the gap altogether, the extension may be made of a pliable material or be fabricated in a telescoping or accordion arrangement to permit contact with opposing parts without damage thereto. By designing extensions using accepted hydraulic principles, a better fit of the stay vane to its associated wicket gate, and possibly to the turbines runners may be effected, further improving operational efficiency and possibly even extending maintenance intervals.